

**The Knowledge Bank at The Ohio State University**  
**Ohio State Engineer**

**Title:** Back Matter

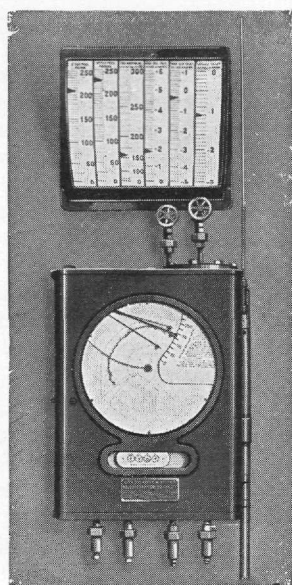
**Issue Date:** Jan-1926

**Publisher:** Ohio State University, College of Engineering

**Citation:** Ohio State Engineer, vol. 9, no. 2 (January, 1926), 43-48.

**URI:** <http://hdl.handle.net/1811/33758>

**Appears in Collections:** [Ohio State Engineer: Volume 9, no. 2 \(January, 1926\)](#)



*BOILER PANEL consisting of Bailey Multi-Pointer Gage, Type P6F, and Bailey Boiler Meter, Type D26, Class 59.*

## BAILEY METERS

BAILEY BOILER METERS are of real assistance in obtaining maximum efficiency and capacity from boiler operation because they record the rate of Steam Flow from the boiler, the rate of Air Flow through the furnace and the Flue Gas Temperature on a single uniformly graded chart. The relation between the Steam Flow and Air Flow shows instantly whether an excess or a deficiency of air is being supplied. Stoker speed as well as the integrator for Steam Flow may be added.

BAILEY MULTI-POINTER GAGES are made with any number of pointers to fit each installation. Indicate Pressure, Temperature, Rate of Flow, Draft, Speed, etc.

BAILEY METERS FOR COAL AND GRANULAR MATERIALS measure coal, crushed ore and other granular materials in large quantities.

BAILEY FLUID METERS record and integrate the flow of steam or water at any pressure or temperature. The meters may be supplied with pressure recorders, temperature recorders or both.

BAILEY GAS METERS record and integrate the flow of low or high pressure gas or air at any temperature. Special meters built for measurement of chemically active gases.

BAILEY GRAVITY RECORDERS FOR LIQUIDS record the true specific gravity of a flowing sample on a 12-inch circular chart.

OTHER TYPES of Meters as well as recording and indicating Gages are made for different purposes, so that nearly any problem in connection with the metering of fluids can be handled.

*Bulletins Sent on Request*

### Bailey Meter Company

2043 E. 46th St.

Cleveland, Ohio

Engineering and Contracting, Steam Heating and Ventilating, Hot Water Heating, Plumbing, Water Softeners, Oil Burning Equipment, Sheet Metal Construction

*A Complete and Perfect Service*

### The Huffman-Wolf Co.

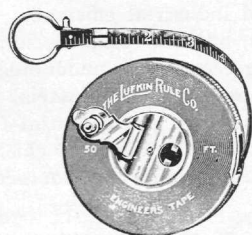
661 N. High St., Columbus, Ohio  
Citizen 7749; Main 2332

W. L. GEIGLE, President  
T. H. BRANNAN, Secretary

### The Franklin Asphalt Paving Company

310 Comstock Bldg.

208 South High Street  
Columbus : : Ohio



THE ENGINEER'S PATTERN

Popular with the engineers. A  $\frac{1}{4}$ " wide extra heavy steel tape in substantial metal-lined leather case. Also furnished in open disc reel and open metal frame.

TWO STURDY AND RELIABLE

## LUFKIN TAPES

FOR ENGINEERS  
SURVEYORS  
ROAD BUILDERS

Our line includes, also, a tape for every purpose, each one the best designed for its work.

SEND FOR CATALOG

### THE LUFKIN RULE CO.

SAGINAW, MICH.

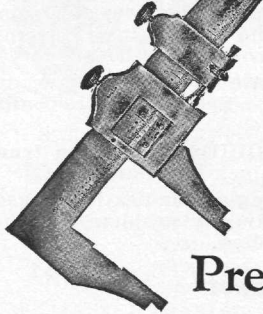
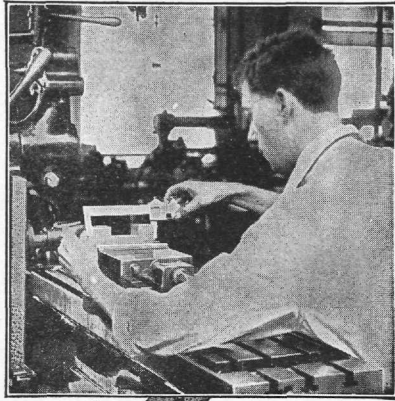
New York

Windsor, Can.



THE "CHALLENGE"

Suitable for any measuring. A steel line in high-grade metal-lined leather case. Made with  $\frac{3}{8}$ " and  $\frac{1}{2}$ " wide line. Many highway departments prefer the  $\frac{1}{2}$ " and we recommend it for heavy service.



## Re-making the World with Precision Tools

**I**T is difficult to comprehend the tremendous changes made possible in the world by the introduction of practical precision tools. The astounding mechanical progress of the past 50 years, which has completely changed man's environment, would have been impossible without them. They place within reach of all the standards without which working methods in the metal trades would be primitive.

The vernier as a mechanical principle of indicating very small dimensions was invented by Pierre Vernier in 1631. The first practical application of the principle to a measuring tool for metalworkers was not made, however, until 1851, when Jos. R. Brown invented the Vernier Caliper.

The manufacture of this highly useful tool by the Brown & Sharpe Mfg. Co., dated from that year. Today, hundreds of styles and sizes of tools embodying the vernier, and measuring to one thousandth of an inch, are made by this company and distributed all over the world.



The first and original Vernier Caliper, so far as is known, invented in 1851 by Jos. R. Brown, the founder of the Brown & Sharpe Mfg. Co.

**BROWN & SHARPE MFG. CO.**  
PROVIDENCE, R. I., U. S. A.

## BRINGING MORE DAYLIGHT INTO INDUSTRIAL BUILDINGS.

Dr. George M. Price, writing on "The Importance of Light in Factories," in "The Modern Factory," states: "Light is an essential working condition in all industrial establishments, and is also of paramount influence in the preservation of the health of the workers. There is no condition within industrial establishments to which so little attention is given as proper lighting and illumination. Especially is this the case in many of the factories in the United States. A prominent investigator, who had extensive opportunities to make observations of industrial establishments in Europe as well as in America, states: "I have seen so many mills and other works miserably lighted, that bad light is the most conspicuous and general defect of American factory premises."

"My own investigations for the New York State Factory Commission support this view. In these investigations it was found that 36.7% of the laundries inspected, 49.2% of the candy factories, 48.4% of the printing places, 50% of the chemical establishments, were inadequately lighted. There was hardly a trade investigated without finding a large number of inadequately lighted establishments."

Inadequate and defective lighting of industrial buildings is not confined to the establishments in New York State alone. The same conditions prevail in most sections of the country.

Such conditions as mentioned above are entirely opposed to the laws of health, sanitation and efficiency. Wherever poor lighting conditions prevail, there must be a corresponding loss of efficiency and output both in quality and in quantity. American industry is not using nearly enough daylight and sunlight in its buildings. Every endeavor should be made to use as much as possible of daylight for lighting purposes. To obtain this it is of course necessary that the rays of daylight and sunlight are permitted to enter the interior of the buildings as freely as possible, with the important modification that the direct rays of the sun must be properly diffused to prevent glare and eyestrain. A glass especially made for this purpose is known as Factrolite, and is recommended for the windows of industrial plants. Windows should be kept clean if the maximum amount of daylight is to pass through the glass, but the effort will be well repaid by the benefits secured.

In the presence of poor lighting, we cannot expect men to work with the same enthusiasm as when a well lighted working place has been provided. The physical surroundings have a deep effect upon the sentiments of the employees, and where bad working conditions are allowed to prevail, there is invariably a lessening of morale and satisfaction created thereby. Neglecting to utilize what nature has so bounteously provided, daylight, and which is so essential toward industrial efficiency, we have an instance of wastefulness, but now that the importance of good lighting is becoming recognized, undoubtedly more attention will be given by progressive industrial employers to furnishing the means which are essential for their workers to secure and maintain the efficiency, which counts for so much in the success of any industrial concern in this competitive age.

If you are interested in the distribution of light through Factrolite, we will send you a copy of Laboratory Report—"Factrolited."

**MISSISSIPPI WIRE GLASS CO.,**

220 Fifth Avenue,

St. Louis.

New York.

Chicago.

No. 3.





# More than an “Anti-Friction” Bearing

Bearing applications considered closed to all types of anti-friction bearings, for practical reasons, have yielded to the superior characteristics of Timken Tapered Roller Bearings.

Bearing applications traditionally confined to other anti-friction bearings have been so greatly improved by the adoption of Timkens, that Timken dominance has been established in the face of prejudice.

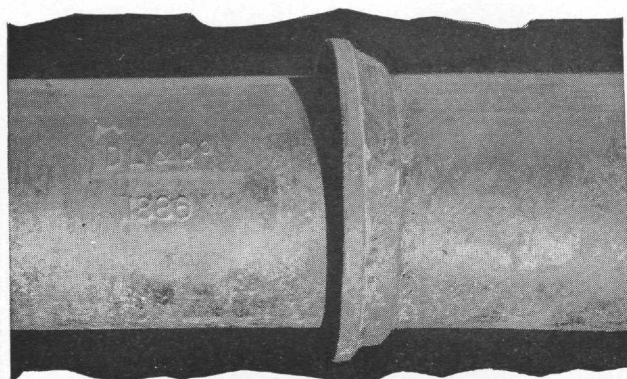
Timken Bearings introduce properties of their own which often outweigh even the elimination of excess friction. For Timkens combine

thrust, shock and radial capacity. Timkens simplify design. Timkens reduce weight. And Timkens have the supreme endurance of Timken-made electric steel.

There are sound economic reasons for the intense professional interest in Timken Bearings in every engineering field today. The engineer of tomorrow will surely work even more largely with Timken Tapered Roller Bearings. It is worthwhile knowing the Timken story. A request brings an informative booklet.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

## **TIMKEN** *Tapered Roller* **BEARINGS**



## Bell and Spigot Joint

**T**HE Bell and Spigot Joint for Cast Iron Pipe, adopted over one hundred years ago, is the preferred joint today.

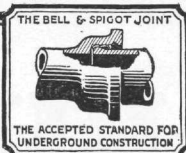
It is tight, flexible, easily made and non-corrodible. There are no bolts to rust out. It makes changes of alignment or insertion of special fittings a simple matter. It can be taken apart and the pipe used over again, without any injury. It is not subject to damage in transit. In fact, it embodies practically all of the desirable qualities in an underground joint.

The use of this type of joint, together with the long life of Cast Iron Pipe, makes for extremely low maintenance costs.

THE CAST IRON PIPE PUBLICITY BUREAU  
Peoples Gas Bldg., Chicago

## CAST IRON PIPE

Our new booklet, "Planning a Waterworks System," which covers the problem of water for the small town, will be sent on request



Send for booklet, "Cast Iron Pipe for Industrial Service," showing interesting installations to meet special problems

## TYPE "LLB"

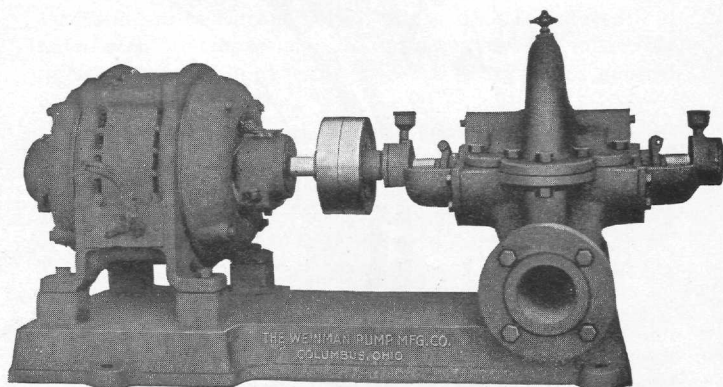
BALL BEARING

Single-Stage

Horizontally Split Casing, Double-Suction  
Centrifugal Pumps

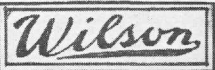
Pumping Machinery for All Purposes

Figure 492



Write for Bulletin

**THE WEINMAN PUMP MFG. CO.**  
COLUMBUS, OHIO, U. S. A.




**Rolling Steel Doors**  
*For durable service*

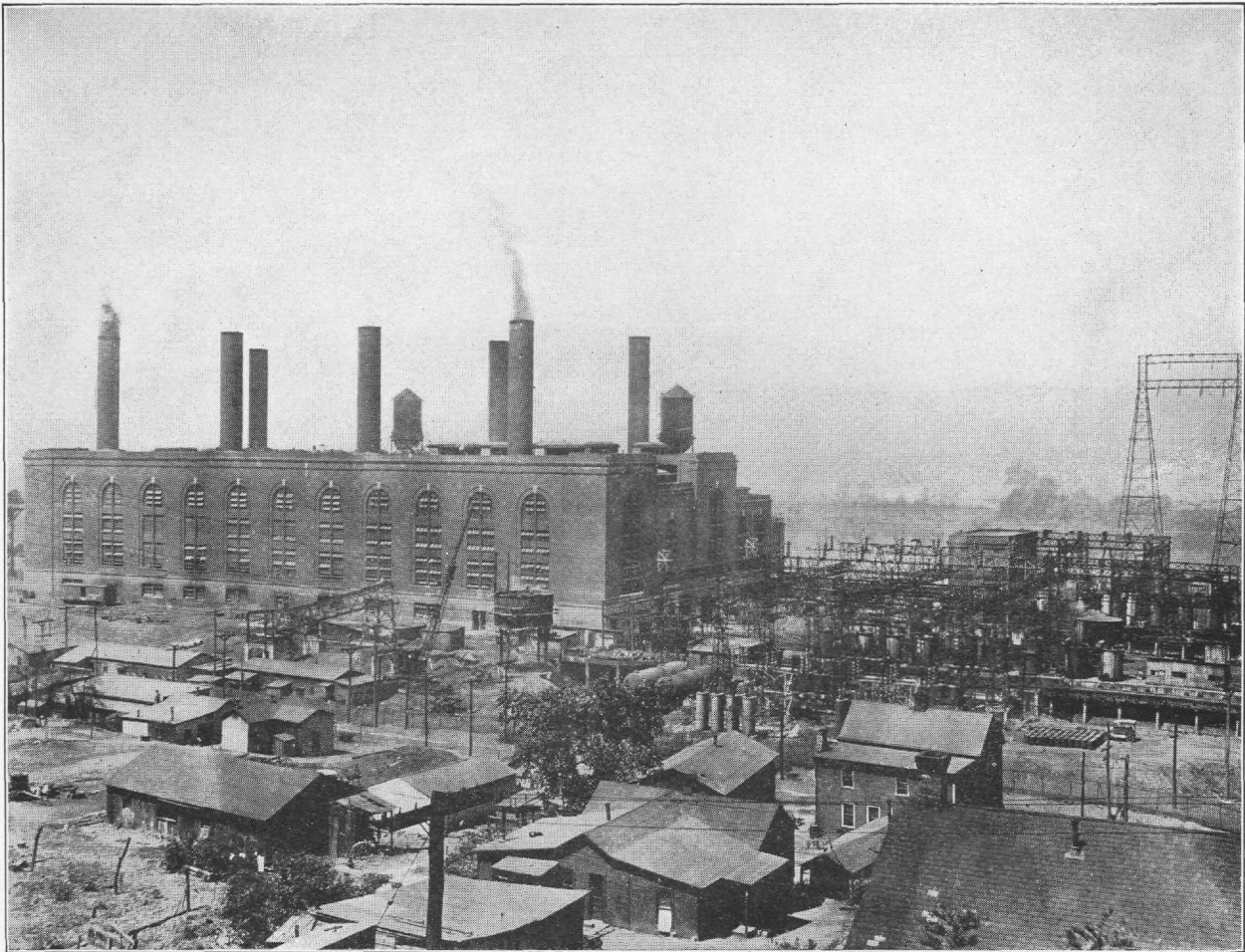
Wilson Rolling Steel Doors installed twenty years ago are still giving excellent service. By rolling overhead and out of the way, they save valuable floor space in Warehouses, Piers, Railroad and Industrial Buildings. They also offer maximum fire resistance and discourage theft. Easily operated by hand, gearing or motor.

Send for 72 page descriptive catalog No. 45

**The J. G. Wilson Corporation**  
Established 1876  
11 East 38th Street, New York City  
Offices in all principal cities







*Steam Power Plant of American Gas and Electric Company, Windsor, W. Va.*

*The Foundation Company, General Contractor*

THE WINDSOR POWER PLANT, ONE OF THE LARGEST IN THE WORLD, WAS DESIGNED TO DEVELOP OVER 260,000 H. P. IT IS ONE OF THE GREAT STATIONS BUILT AT THE MINES TO FURNISH ECONOMICAL ELECTRIC ENERGY TO THE INDUSTRY OF THE NATION. EIGHT CONTRACTS OF MAGNITUDE WITH THE FOUNDATION COMPANY, WERE INVOLVED IN THE CONSTRUCTION AND EXTENSION OF THIS LARGE PROJECT

## ON LAND OR WATER, AT HOME OR ABROAD

THE FOUNDATION COMPANY, AN ORGANIZATION OF DESIGNING AND CONSTRUCTING ENGINEERS, SPECIALIZES IN THE BUILDING OF DIFFICULT STRUCTURES. THE WORK OF THE FOUNDATION COMPANY, THROUGHOUT THE WORLD, INCLUDES ALL PHASES OF PRIVATE OR PUBLIC UNDERTAKINGS IN THE CONSTRUCTION FIELD

# THE FOUNDATION COMPANY

## CITY OF NEW YORK

Office Buildings · Industrial Plants · Warehouses · Railroads and Terminals · Foundations  
Underpinning · Filtration and Sewage Plants · Hydro-Electric Developments · Power Houses  
Highways · River and Harbor Developments · Bridges and Bridge Piers · Mine Shafts and Tunnels

CHICAGO  
PITTSBURGH  
ATLANTA

SAN FRANCISCO  
LOS ANGELES  
MONTREAL

LIMA, PERU  
CARTAGENA, COLOMBIA  
MEXICO CITY

LONDON, ENGLAND  
PARIS, FRANCE  
LOUVAIN, BELGIUM

BUILDERS OF SUPERSTRUCTURES AS WELL AS SUBSTRUCTURES



## Consider the Bearings

**I**NDUSTRIAL products enter a world of use and abuse—and upon their long-lived, dependable performance, manufacturers are judged.

Performance—upon which repeat orders are based—is not entrusted to “any old bearing that will fit the space,” but to one in keeping with the manufacturer’s reputation.

Bearings govern so many operating factors, that their selection is the very foundation of good machine design.

For more than 35 years, manufacturers of dependable equipment have designed their products around Hyatt Roller Bearings. They are built for continual hard service—require but slight attention—and once installed, last a lifetime.

Later on, when you are called upon to consider the bearings for new or existing equipment, remember that Hyatt Roller Bearings will solve problems for you as they have for many other engineers.

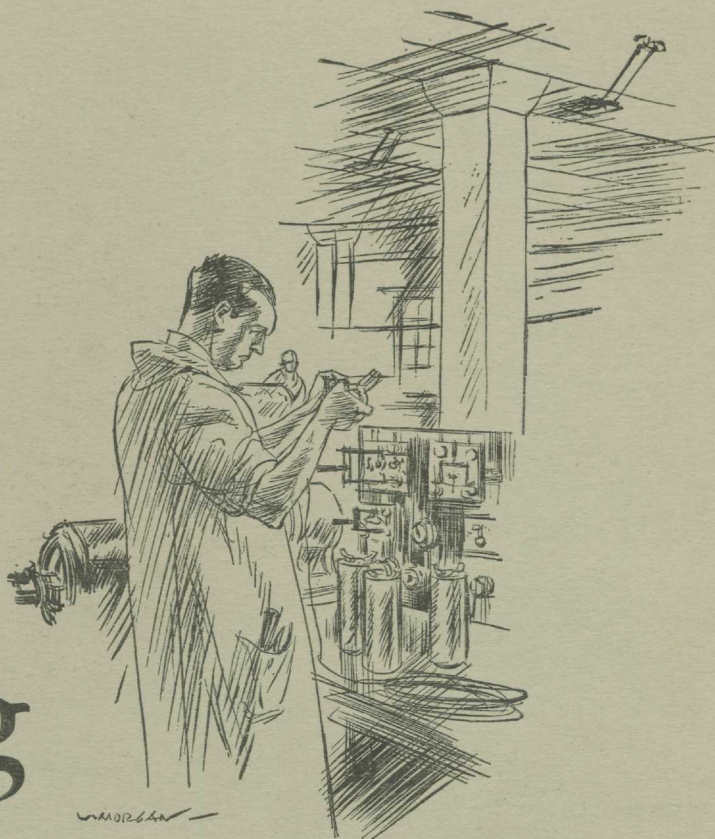
HYATT ROLLER BEARING COMPANY, NEWARK, N. J.

**HYATT**  
ROLLER BEARINGS

“Even now, feel free to call upon us for information, if you are considering the bearings in connection with your machine design studies.”



# Lab Lightning



Douglas F. Miner

SOME of the men at Clark University mentioned it first. "Doug surely lives in the Lab," they remarked. Later, too, at Worcester Polytechnic Institute, instructors made the same comment. And Douglas F. Miner, himself, agrees that he did—and does. That makes it unanimous.

"Big league lab work" was his aim as he turned to Westinghouse after graduation in 1917. But not until his return from overseas service two years later could he settle down to the lab. Now—at thirty-three—he's in charge of experiments at our Engineering, High Power, and High Voltage Laboratories, with a staff of twenty-five to direct.

He can unleash artificial lightning of 5,000,000 horsepower in 5/1000 of a

second. At his bidding the world's largest single-unit transformer will step current up to a million and a quarter volts.

He has demonstrated the greatest artificial arc on record—fifty-five feet in length. To further his experiments a single generating plant, capable of producing on short circuit a million horsepower, has been erected.

There is a practical reason for these super-tests—for this equipment in advance of what the world uses now in its daily work. This, for instance, is frequently the attitude of a Central Station customer: "Of course your apparatus meets our needs today—takes every test to which we can put it now. But what of 1950? Will this insulation stand the load we will

*The question is sometimes asked: Where do young men get when they enter a large industrial organization? Have they opportunity to exercise creative talents, or are they forced into narrow grooves?*

*This series of advertisements throws light on these questions. Each advertisement takes up the record of a college man who came with the Westinghouse Company, within the past ten years, after graduation.*

use then? And how many volts will these arresters bear?"

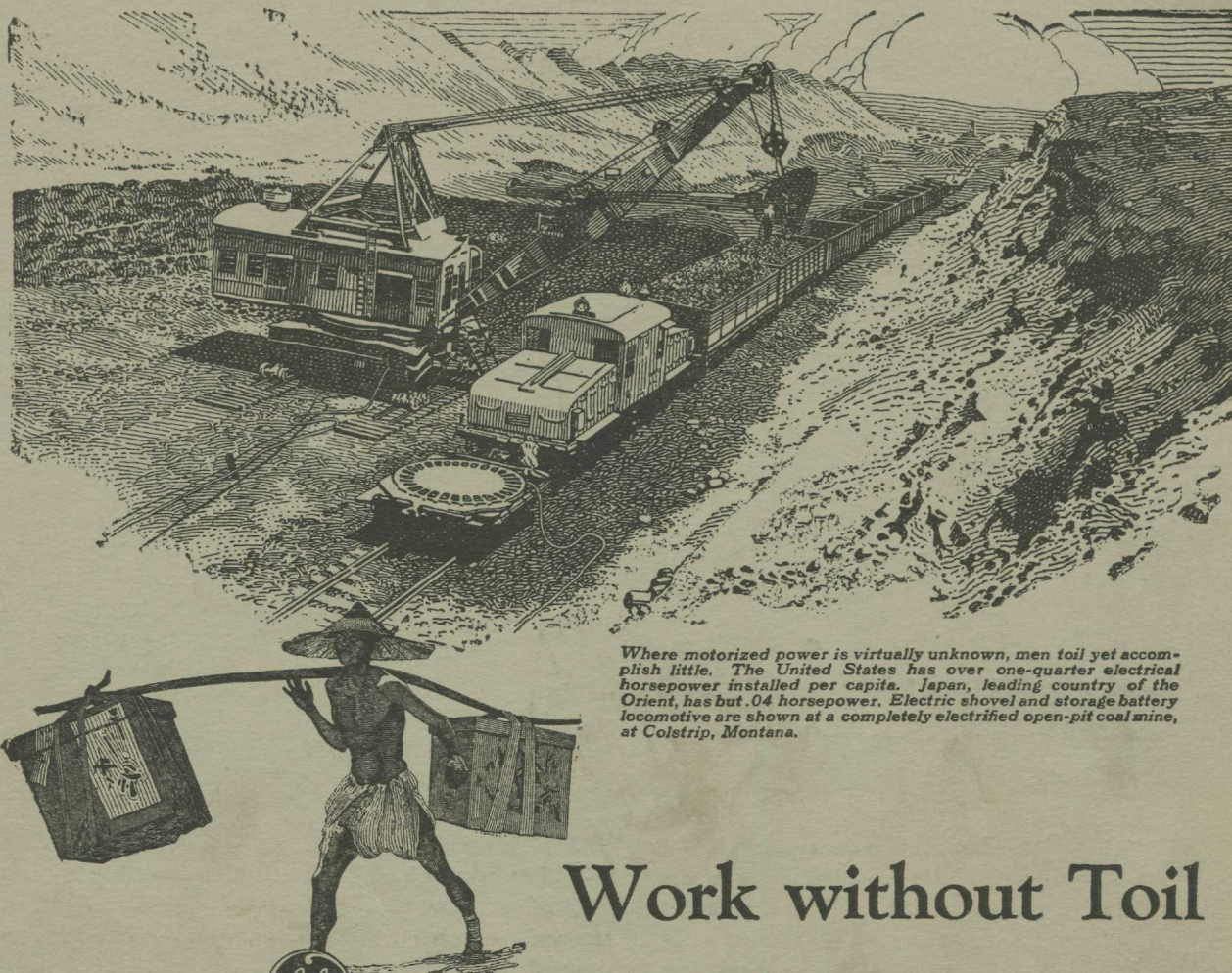
They come to Miner for the answer. He gets it from the laboratories. He produces under a roof the same conditions which nature, or time, may be holding in store for Westinghouse equipment.

Such is the pioneering of Westinghouse Laboratory Engineers. They are "experimenting in the tomorrow"—the step between research and application. They are finding growth, reward, congenial work, while following a bent for trying things out.

# Westinghouse







*Where motorized power is virtually unknown, men toil yet accomplish little. The United States has over one-quarter electrical horsepower installed per capita. Japan, leading country of the Orient, has but .04 horsepower. Electric shovel and storage battery locomotive are shown at a completely electrified open-pit coal mine, at Colstrip, Montana.*

## Work without Toil

**G-E Motorized Power**—an ideal combination of electric motor and control properly fitted to the individual task—is at work the world-over, relieving workers more and more for better and more profitable pursuits.

A new series of G-E advertisements showing what electricity is doing in many fields will be sent on request. Ask for Booklet GEK-1.

Ten or twelve hours a day toils the coolie. If he carries all he can, he moves *one ton one mile* in *one day*. For that he receives twenty cents.

Cheap labor! Yet compared with our American worker, receiving at least twenty-five times as much for an eight-hour day, the coolie is expensive labor. In America we move *one ton one mile* for less than *one cent*. The coolie, working by hand, accomplishes little; while the American, with electricity's aid, accomplishes much.

Plenty of electricity and cheap electricity —these are two great advantages which America enjoys over the rest of the world. While our present generating capacity is 20,600,000 kilowatts, new developments call for 3,000,000 kilowatts more per year.

To college men and women—potential leaders—will fall the duty of finding more and still more work for electricity, with less and still less toil for our workers. For the task is but begun!

95-141DH

# GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK